# New Jersey Economic Analysis of Animal Agriculture: 2012-2022

***September 2023***

*Prepared For:*

UNITED SOYBEAN BOARD™

*Prepared By:*

Decision Innovation Solutions

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## New Jersey Executive Summary

The use of SBM as a key feed ingredient is an important part of New Jersey animal agriculture. While the degree to which animal agriculture utilizes this versatile feed ingredient has fluctuated with time, it remains a key driver of animal agriculture's success in the State of New Jersey. The success of New Jersey animal agriculture in turn has a large impact on the rest of the state and regional economies. For example, in the State of New Jersey during 2022 animal agriculture contributed:

- $411.6 million in economic output
- 2,285 jobs
- $83.9 million in earnings
- $22.0 million in income taxes paid at local, state, and federal levels
- $69.1 million in the form of property taxes

New Jersey's animal agriculture consumed almost 33.5 thousand tons of SBM in 2022. This SBM was fed primarily to:

- Egg-Laying Hens (21.5 thousand tons)
- Companion Animals (9.0 thousand tons)
- Dairy Cows (1.3 thousand tons)

This report examines animal agriculture in New Jersey over the last decade. While this analysis is certainly instructive and allows improved understanding of animal agriculture's impact during that time, as the next decade unfolds in New Jersey, many opportunities and challenges will arise. And, if past is prologue, animal agriculture will continue to be a major contributor to the economic well-being of the people of New Jersey and beyond.



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## New Jersey Economic Impact of Animal Agriculture

Animal agriculture is an important part of New Jersey's economy. In 2022, New Jersey's animal agriculture contributed the following to the economy:

- About $411.6 million in economic output
- $83.9 million in household earnings
- 2,285 jobs
- $22.0 million in income taxes

And the animal agriculture sector has shown some change during challenging economic times. During the last decade New Jersey's animal agriculture has:

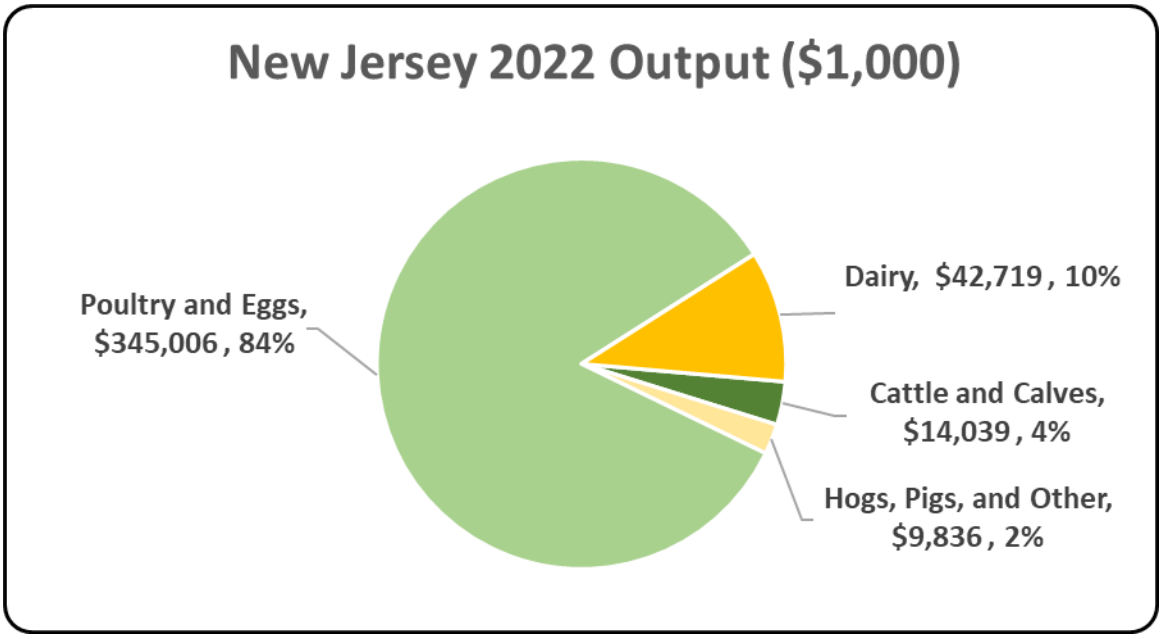
- Increased economic output by $155.9 million
- Boosted household earnings by $30.7 million
- Added 779 jobs
- Paid $8.1 million more in income taxes

Below is a table which demonstrates this decade of change.

| Measure | | 2022 | | Change 2012-2022 | % Change 2012-2022 |
|---|---|---|---|---|---|
| **Output ($1,000)** | $ | 411,600 | $ | 155,937 | 60.99% |
| **Earnings ($1,000)** | $ | 83,911 | $ | 30,691 | 57.67% |
| **Employment (Jobs)** | | 2,285 | | 779 | 51.72% |
| **Income Taxes Paid ($1,000)** | $ | 22,048 | $ | 8,064 | 57.67% |
| **Property Taxes Paid in 2017 ($1,000)** | $ | 69,122 | | | |

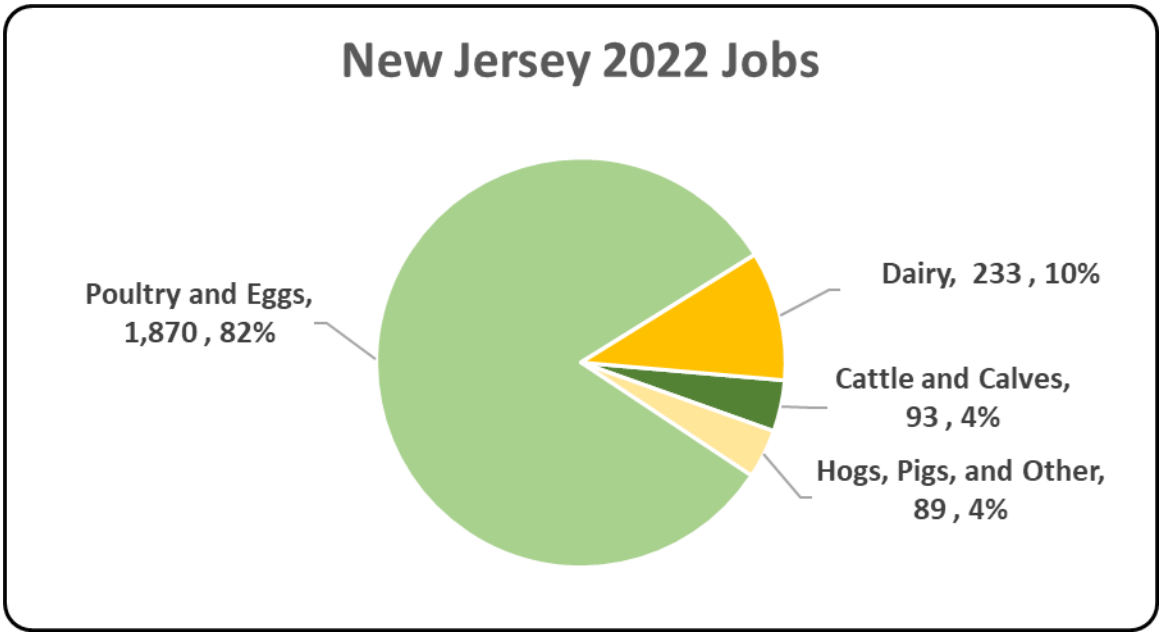
## New Jersey Output

"Output" refers to the total value of all the output (production or sales) of a study area and/or industry within a study area and was calculated using RIMS II multipliers. This is a gross number that does not make any deductions for the cost or origination of inputs that were used in the production process. The figure illustrates the impact of animal agriculture to the New Jersey economy. Animal agriculture's impact on New Jersey total economic output is about $411.6 million.




## New Jersey Jobs

"Jobs" represents an estimate of the number of full or part-time positions (jobs) currently filled in an area and/or industry. The figure illustrates the contribution to New Jersey in terms of animal agriculture jobs. As shown, animal agriculture contributes significantly to New Jersey total jobs, contributing 2,285 jobs within and outside of animal agriculture.



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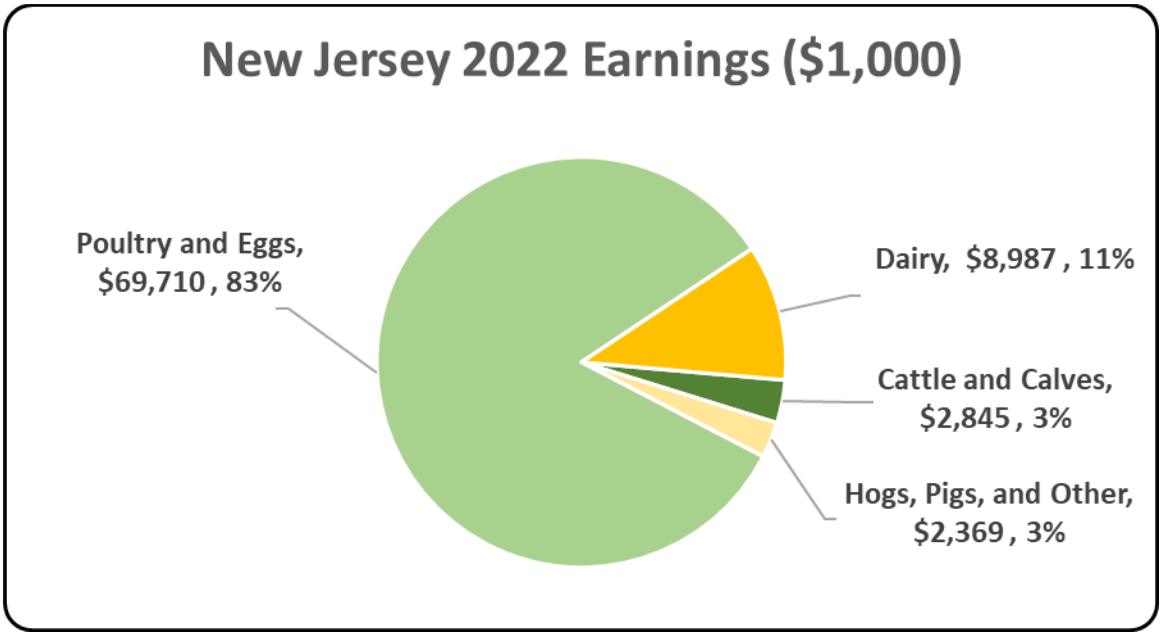
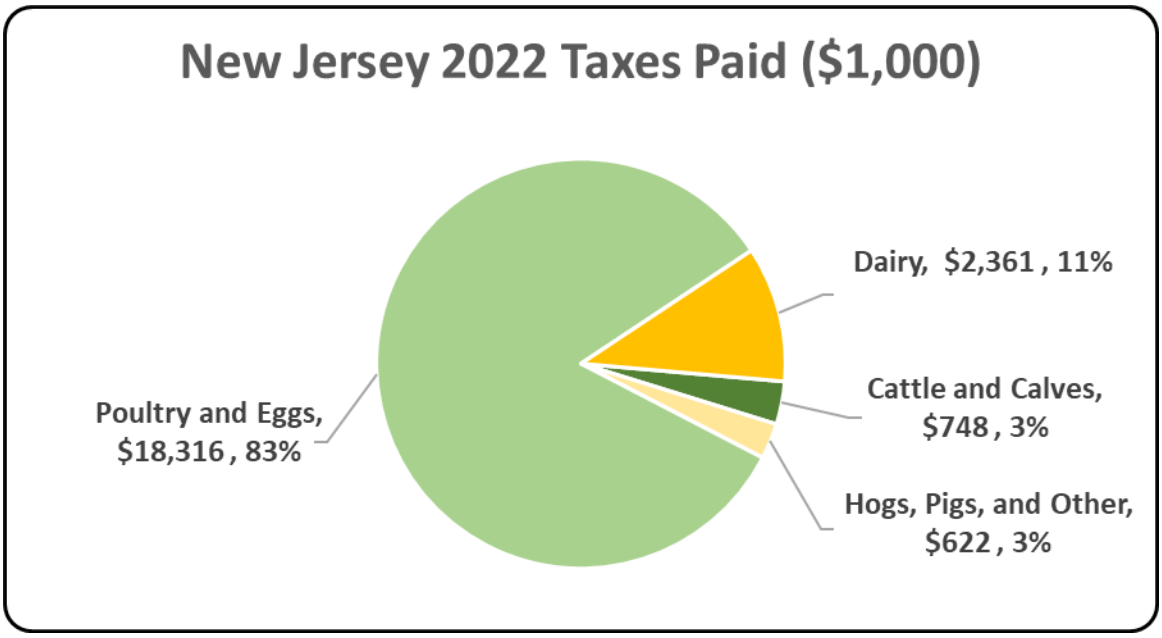
## New Jersey Earnings

Earnings includes wages and salaries plus proprietors' income, which is the net earnings of sole-proprietors and partnerships. The figure illustrates the impact of animal agriculture to the New Jersey economy in terms of earnings. New Jersey's animal agriculture contributed about $83.9 million to household earnings in 2022.




## New Jersey Taxes Paid by Animal Agriculture

New Jersey's animal agriculture is also a significant source of tax revenue. In 2022, the state's animal agriculture industry paid about $22.0 million in income taxes at local, state, and federal levels. The 2017 Census of Agriculture estimated $69.1 million in property taxes paid by all of New Jersey agriculture during 2017. Estimates of income taxes paid by animal agriculture are shown in the following chart.



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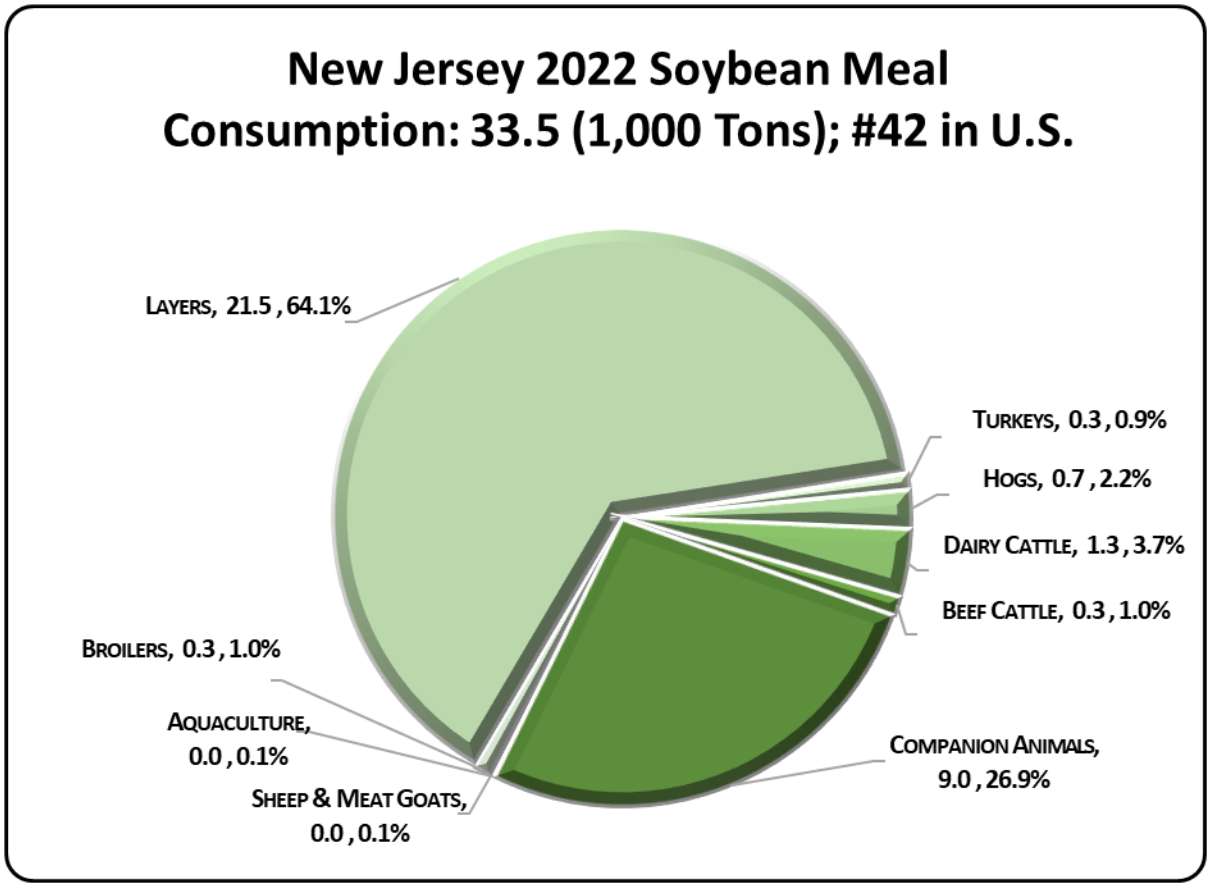
## New Jersey Animal Agriculture Soybean Meal Consumption

The choice to use SBM in animal agriculture is highly dependent upon nutritional requirements of animals (which would encompass varying life stages within an animal species), accessibility to various feed ingredients capable of competing with SBM (from both a nutritional and price standpoint), and consumer preferences which have influence on production practices.

Through in-depth conversations with many of the nation's top nutritionists and researchers from both private industry and public institutions, "bottom up" estimates of SBM usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of SBM used during the 2021-22 soybean marketing year by up to sixteen specific animal species has been estimated.

New Jersey's animal agriculture consumed almost 33.5 thousand tons of SBM in 2022, placing the state as 42 in the nation in terms of SBM consumption (see figure below). Additionally, animal agriculture in New Jersey consumed 1.3 thousand tons of soy hulls. The three segments of animal agriculture that led the state in estimated SBM consumption are:

1. Egg-Laying Hens (21.5 thousand tons)
2. Companion Animals (9.0 thousand tons)
3. Dairy Cows (1.3 thousand tons)



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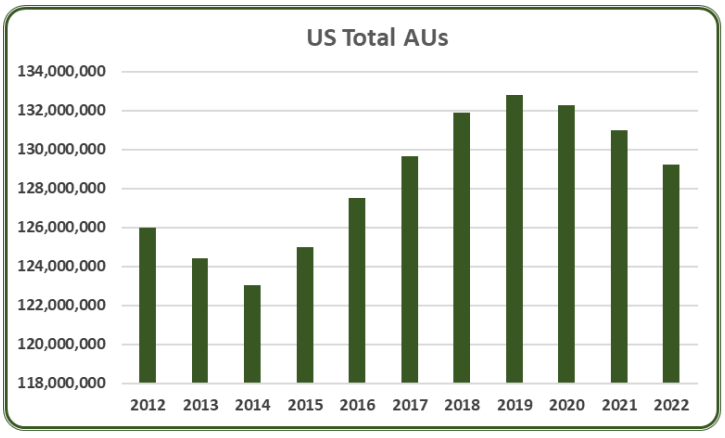
## New Jersey Animal Unit (AU) Trends

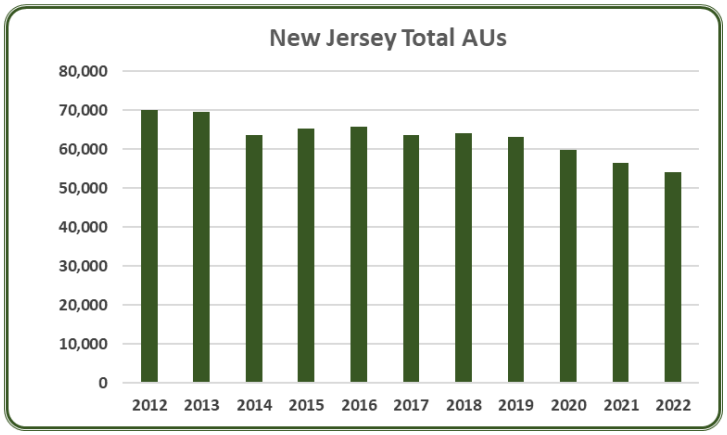
Over time, prices of feed, meat, eggs and milk, as well as levels of demand for these products in the U.S. and abroad have an impact on the size of animal agriculture in the state of New Jersey. Due to this reality, using a single year to measure a sector's presence and strength can be misleading. The use of animal units allows for a more accurate comparison of differing sizes of livestock and poultry. This section is included to bring context to the question of what animal agriculture means to New Jersey and to give perspective on New Jersey's contribution to the nation's animal agriculture industry and beyond.

Like using a single year to measure the presence and strength of a sector, in some circumstances AUs can be misleading. This is because AUs do not reflect important considerations like increased weights, improved livability, increased laying potential, etc.

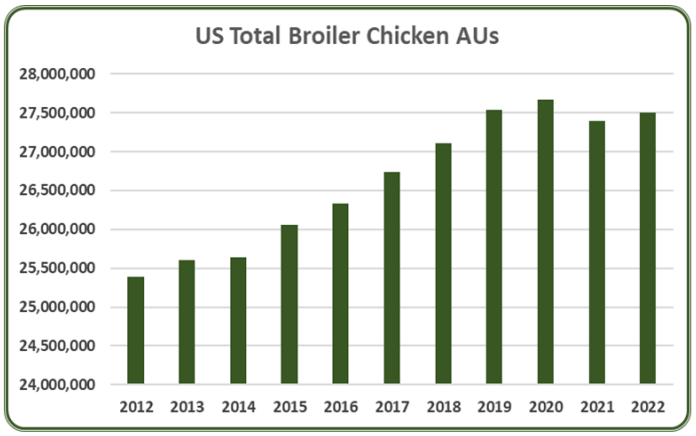
As shown in the accompanying charts and written commentary, certain components of animal agriculture are more present, and therefore more dominant than others. This is due primarily to geography (i.e., weather patterns and access to certain transportation hubs), proximity to high quality, relevant feed ingredients, and the local animal agriculture regulatory framework. In New Jersey, the largest three segments of animal agriculture in terms of AUs during 2022 were: Horses (18,549 AUs), Beef Cattle (12,590 AUs), and Dairy Cattle (9,727 AUs). Total AUs in New Jersey during 2022 were 54,031 AUs.



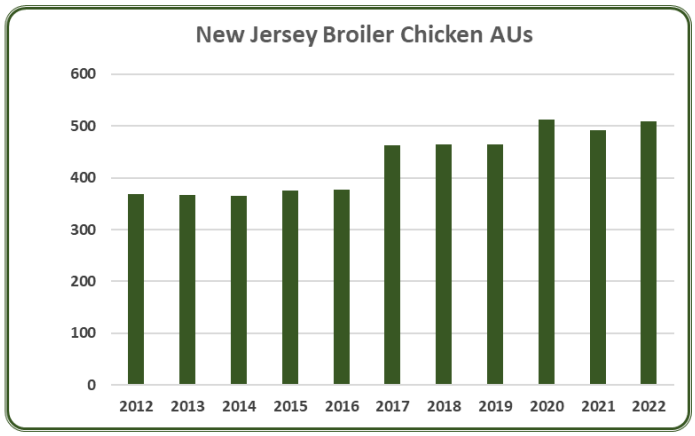

- In 2022, total AUs in the U.S. decreased by 1.4% to 129.2 million, continuing a downward trend that started in 2019. Nine out of the ten animal groups tracked saw a decrease, with the exception being broilers. Over 70% of the total decrease in AUs is due to lower beef cattle inventories.



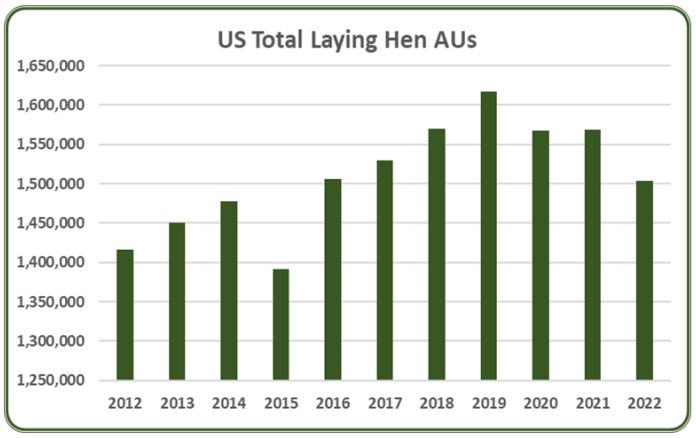

- In 2022, New Jersey had 54,031 total AUs, a 4.3% decrease from 2021. From 2012 to 2022, the average number of total AUs in New Jersey was 63,231 AUs. Since 2012, total AUs in New Jersey have decreased by 22.8%.



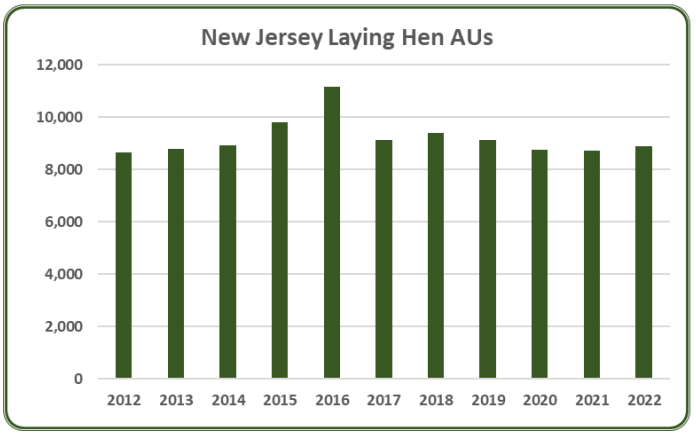

- From 2012 to 2022, broiler chicken AUs averaged 26.6 million across the U.S. Broiler AUs trended up and peaked in 2020 at 27.6 million. Broiler AUs are up 0.4% from 2021 and were the only animal group tracked here that increased compared to last year. Broilers make up about 21% of U.S. AUs.




- In 2022, New Jersey had 508 broiler AUs, a 3.3% increase from 2021. Broilers accounted for 0.9% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of broiler AUs in New Jersey was 432 AUs. Since 2012, broiler AUs have increased by 37.9%.




- From 2012 to 2022, U.S. layer AUs averaged 1.51 million. In 2022, layer AUs were 1.50 million, a 4.2% decrease from 2021. The 2022-23 Highly Pathogenic Avian Influenza (HPAI) outbreak contributed to this past year's decrease in layer AUs. Layers make up about 1% of U.S. AUs so large changes in layer AUs do not have a large impact on total AUs.




- In 2022, New Jersey had 8,870 layer AUs, a 1.9% increase from 2021. Layers accounted for 16.4% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of layer AUs in New Jersey was 9,198 AUs. Since 2012, layer AUs have increased by 2.8%.



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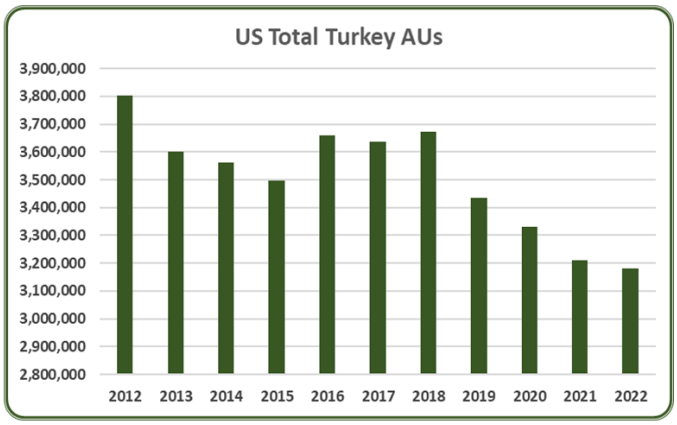
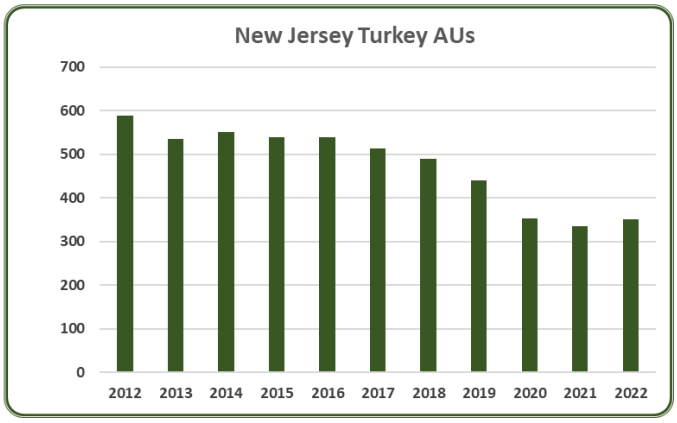
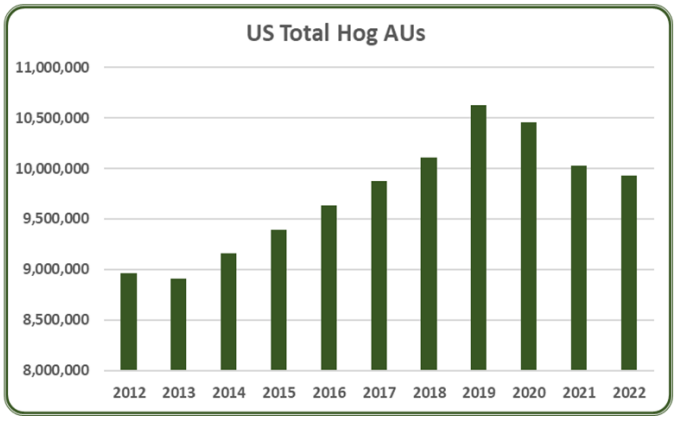


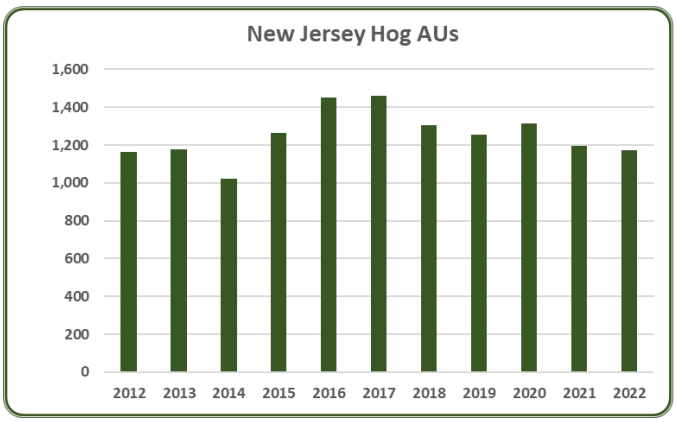

- In 2022, turkey AUs were at 3.18 million, a 0.9% drop from the previous year. This drop is surprisingly low considering the industry battled HPAI for most of 2022. Turkey AUs have been trending down since 2018. Turkey AUs represent about 2% of U.S. AUs, so like layers, large changes in turkey AUs do not cause large changes in total AUs.



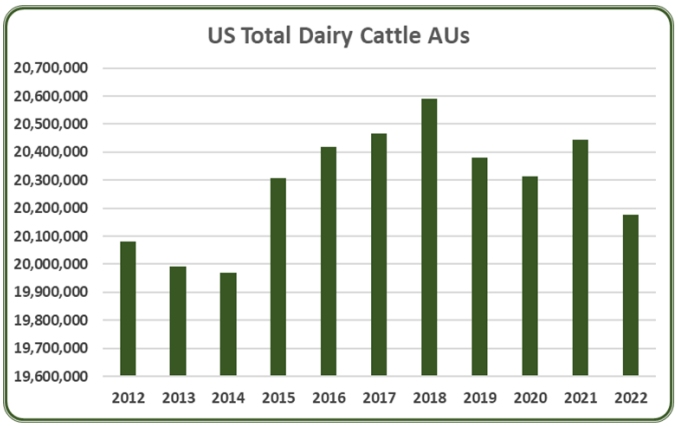

- 2022, New Jersey had 350 turkey AUs, a 4.3% increase from 2021. Turkeys accounted for 0.6% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of turkey AUs in New Jersey was 476 AUs. Since 2012, turkey AUs have decreased by 40.5%.



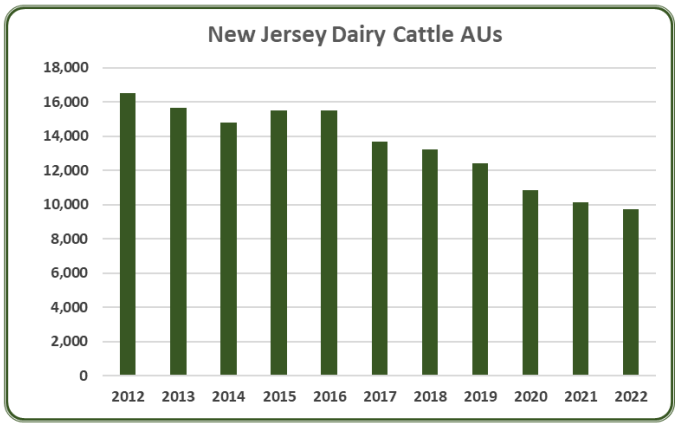

- In 2022, hog AUs totaled 9.93 million, a 1.0% drop from the previous year. From 2012 to 2022, hog AUs averaged 9.73 million. Hog AUs have been trending down since 2019 when they peaked at 10.62 million AUs. Hogs make up 7.70% of all AUs within the U.S.



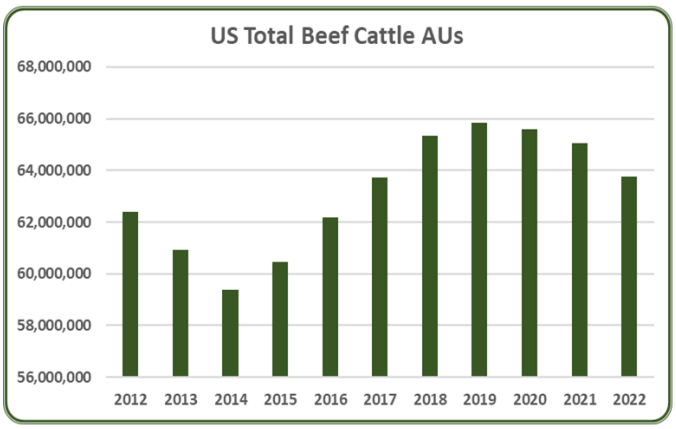

- In 2022, New Jersey had 1,170 hog AUs, a 2.1% decrease from 2021. Hogs accounted for 2.2% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of hog AUs in New Jersey was 1,253 AUs. Since 2012, hog AUs have increased by 0.5%.



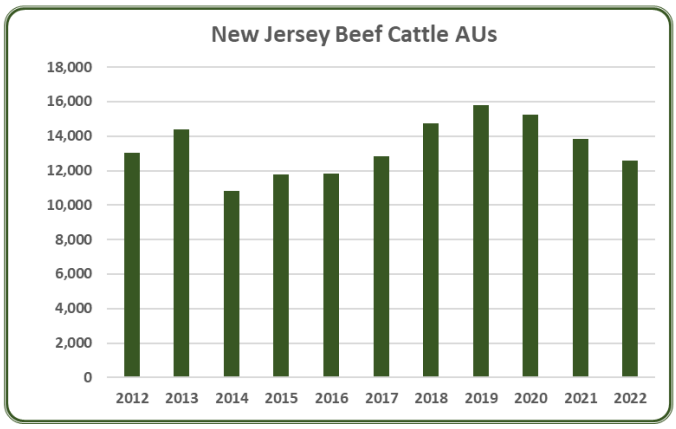

- From 2012 to 2022, dairy cattle AUs averaged 20.29 million. The herd was also relatively steady, fluctuating between 19.9-20.6 million AUs during that time. In 2022, dairy cattle AUs totaled 20.18 million, down 1.3% from 2021. Dairy cattle represented about 16% of all U.S. AUs.



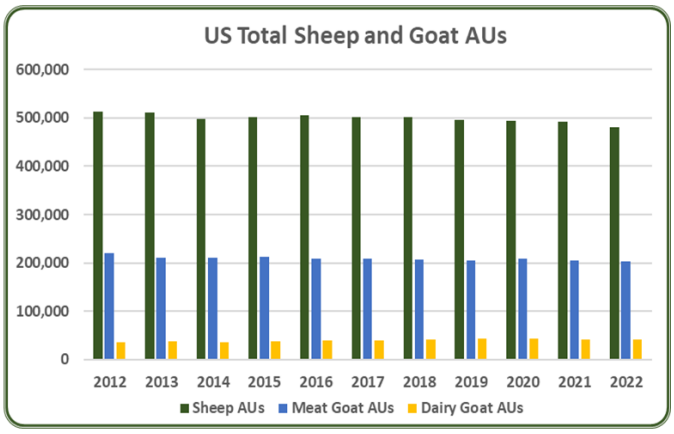

- In 2022, New Jersey had 9,727 dairy cattle AUs, a 4.3% decrease from 2021. Dairy cattle accounted for 18% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of dairy cattle AUs in New Jersey was 13,458 AUs. Since 2012, dairy cattle AUs have decreased by 41.1%.



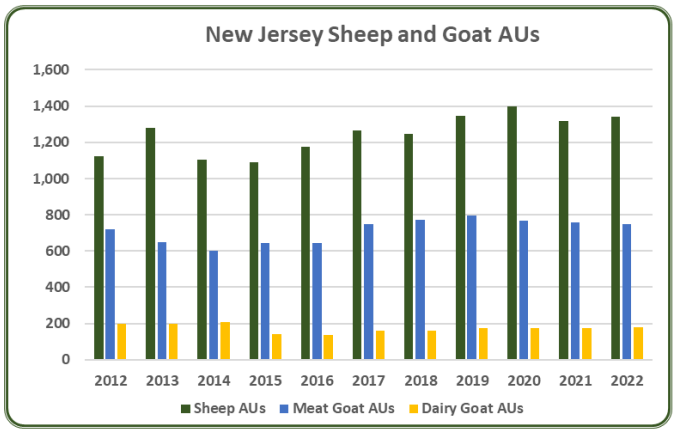

- From 2012 to 2022, beef cattle AUs averaged 63.9 million. In 2022 beef cattle AUs totaled 63.93 million, down 2% from last year, as beef cattle continued through a contraction phase in the cattle cycle which started in 2019. Beef AUs represent almost 50% of U.S. AUs, so changes in beef cattle AUs have large effects on total AUs.



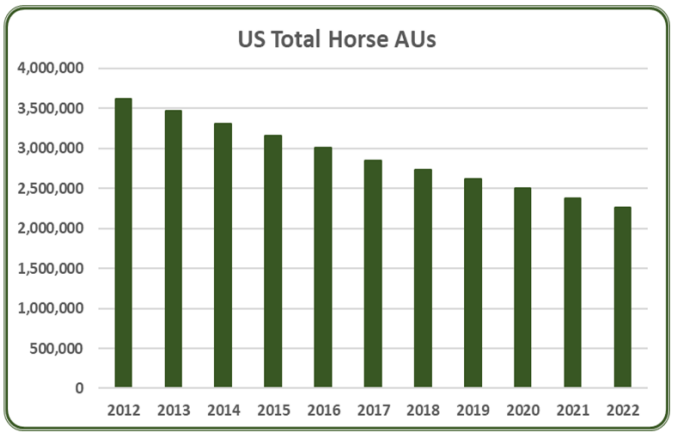

- In 2022, New Jersey had 12,590 beef cattle AUs, a 8.9% decrease from 2021. Beef cattle accounted for 23.3% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of beef cattle AUs in New Jersey was 13,349 AUs. Since 2012, beef cattle AUs have decreased by 3.3%.



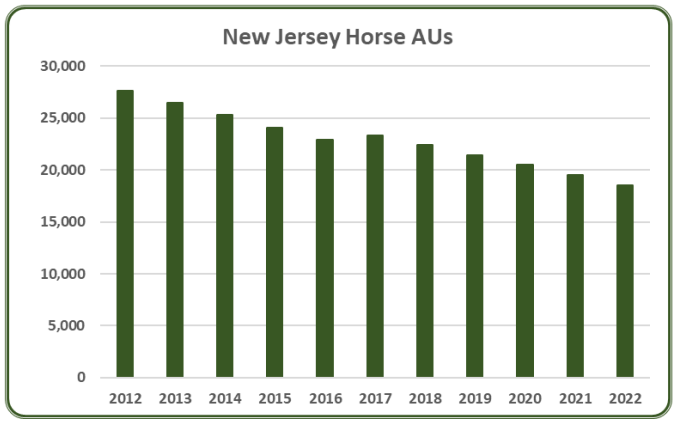

- Sheep, meat goats, and dairy goats account for less than 0.6% of U.S. total AUs. Over the past decade, sheep AUs averaged 500,000, meat goat AUs averaged 209,000 and dairy goat AUs averaged 40,000. Sheep and meat goat AUs have trended down while dairy goats trended up until 2019, then leveled off.




- In 2022, New Jersey had a combined 2,266 sheep, meat goat, and dairy goat AUs, a 0.7% increase from 2021. These accounted for 4.2% of the total AUs (54,031) in New Jersey. Individually, sheep AUs increased 1.9%, meat goat AUs decreased 1.6% and dairy goat AUs increased 1.5%. Combined there was a 11% increase in sheep and goat AUs since 2012.




- Horses account for about 2% of U.S. total AUs. From 2012 to 2022, horse AUs averaged 2.90 million. However, a steady downtrend is present and 2022 horse AUs only totaled 2.26 million. U.S. horse AUs have decreased every year from 2012 to 2022, decreasing 37.6% over the entire period.




- In 2022, New Jersey had 18,549 horse AUs, a 5% decrease from 2021. Horses accounted for 34.3% of the total AUs (54,031) in New Jersey. From 2012 to 2022, the average number of horse AUs in New Jersey was 22,935 AUs. Since 2012, horse AUs have decreased by 32.9%.

## New Jersey Additional Information and Methodology

Animal agriculture is an important part of New Jersey's current and future economic health. To quantify the connection between animal agriculture and local economies, the United Soybean Board commissioned Decision Innovation Solutions, an economic research firm in Urbandale, Iowa, to conduct an in-depth analysis of several aspects of animal agriculture. This analysis includes the following components:

1. Economic impact of animal agriculture to local (state) economies during the 2012-2022 time period
2. SBM usage by animal species during the 2021/22 soybean marketing year
3. Animal Unit (AU) trends from 2012-2022

Given the long-term presence of animal agriculture in New Jersey, of interest is the degree to which the industry impacts the New Jersey economy. Estimates of output, jobs, earnings, taxes paid, and multipliers for New Jersey animal agriculture are presented in this report. Methodology for this section of the report closely mirrors that followed in years' past. Also presented are estimates of the change in how animal agriculture has impacted New Jersey's economy over the last decade. Differences, to the extent they are present, are noted within the larger national report which accompanies this state report.

As with any industry across the economic spectrum, there are ebbs and flows in activity that have implications for other parts of the economy. Again, using the same 2012-2022 time period as with the economic impact section of this state report, the "Animal Unit Trends" seeks to quantify production changes in animal agriculture in New Jersey which have occurred. As shown in this state report, New Jersey has seen changes within its animal agriculture industry. Expectations are that animal agriculture will continue to evolve over the next decade.

Animal agriculture is the single largest user of SBM in New Jersey. Through in-depth conversations with many of the nation's top nutritionists and researchers, "bottom up" estimates of SBM usage by animal type were determined. Using the input from these conversations and additional analysis performed by Decision Innovation Solutions, the quantity of SBM used during the 2021-22 soybean marketing year for up to sixteen specific animal species has been estimated.

Should readers have comments or questions regarding methodology, results and interpretation, please contact the authors at info@decision-innovation.com or 515.639.2900.

## New Jersey Multipliers

Economic multipliers give a sense for how economic activity in a given industry is related to other industries in the same study area. To estimate the impact of animal agriculture on New Jersey's economy, we applied RIMS II multipliers from the Department of Commerce, Bureau of Economic Analysis for cattle ranching and farming, dairy cattle and milk production, poultry and egg production, and other animal production (primarily hogs and pigs), where applicable.

Multipliers are generally stated in the form of "per million dollars" of output. As it relates to this analysis, multipliers are stated as the activity related to every million dollars of economic output in animal agriculture. Referring to the multipliers below, for every million dollars in output generated by the various segments of animal agriculture in New Jersey, $1.53 to $1.94 million in total economic activity, $0.33 to $0.41 in household wages and 10 to 14 additional jobs are generated in the economy at large.



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# Appendix

| | | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Animal Units (AUs) | Beef Cattle AUs | 13,023 | 14,402 | 10,798 | 11,786 | 11,837 | 12,831 | 14,714 | 15,772 | 15,263 | 13,820 | 12,590 |
| | Hog and Pig AUs | 1,164 | 1,179 | 1,021 | 1,265 | 1,451 | 1,462 | 1,307 | 1,256 | 1,315 | 1,196 | 1,170 |
| | Broiler AUs | 368 | 367 | 365 | 374 | 377 | 463 | 464 | 463 | 511 | 492 | 508 |
| | Turkey AUs | 589 | 536 | 551 | 540 | 540 | 513 | 490 | 441 | 353 | 336 | 350 |
| | Egg Layer AUs | 8,630 | 8,777 | 8,904 | 9,789 | 11,154 | 9,105 | 9,384 | 9,106 | 8,750 | 8,706 | 8,870 |
| | Dairy AUs | 16,520 | 15,643 | 14,797 | 15,487 | 15,503 | 13,664 | 13,239 | 12,439 | 10,852 | 10,167 | 9,727 |
| | **Total Animal Units** | **69,994** | **69,509** | **63,642** | **65,227** | **65,744** | **63,583** | **64,204** | **63,251** | **59,870** | **56,485** | **54,031** |
| | | | | | | | | | | | | |
| Value of Production ($1,000) | Cattle and Calves ($1,000) | $ 8,734 | $ 7,340 | $ 10,549 | $ 11,893 | $ 7,436 | $ 7,215 | $ 6,946 | $ 8,031 | $ 6,664 | $ 7,308 | $ 8,719 |
| | Hogs and Pigs ($1,000) | $ 581 | $ 336 | $ 162 | $ 383 | $ 344 | $ 268 | $ 89 | $ 521 | $ 418 | $ 778 | $ 414 |
| | Broilers ($1,000) | $ 23,812 | $ 29,014 | $ 30,438 | $ 26,555 | $ 23,611 | $ 27,724 | $ 23,572 | $ 20,566 | $ 16,806 | $ 23,638 | $ 37,782 |
| | Turkeys ($1,000) | $ 2,533 | $ 2,765 | $ 3,184 | $ 3,467 | $ 3,756 | $ 4,910 | $ 3,337 | $ 4,165 | $ 4,686 | $ 6,329 | $ 12,897 |
| | Eggs ($1,000) | $ 18,672 | $ 31,465 | $ 31,820 | $ 53,538 | $ 20,740 | $ 25,830 | $ 43,895 | $ 19,432 | $ 27,696 | $ 24,606 | $ 130,199 |
| | Milk ($1,000) | $ 24,570 | $ 26,162 | $ 31,623 | $ 22,528 | $ 20,008 | $ 21,777 | $ 17,820 | $ 18,300 | $ 17,372 | $ 16,740 | $ 22,011 |
| | Other | $ 12,927 | $ 12,347 | $ 11,634 | $ 11,006 | $ 10,294 | $ 9,443 | $ 8,736 | $ 8,064 | $ 7,358 | $ 6,649 | $ 6,004 |
| | Sheep and Lambs ($1,000) | $ 531 | $ 655 | $ 646 | $ 722 | $ 714 | $ 567 | $ 564 | $ 596 | $ 594 | $ 589 | $ 648 |
| | Aquaculture ($1,000) | $ 12,396 | $ 11,692 | $ 10,988 | $ 10,284 | $ 9,580 | $ 8,876 | $ 8,172 | $ 7,468 | $ 6,764 | $ 6,060 | $ 5,356 |
| | **Total ($1,000)** | **$ 91,828** | **$ 109,429** | **$ 119,410** | **$ 129,370** | **$ 86,189** | **$ 97,168** | **$ 104,395** | **$ 79,078** | **$ 80,999** | **$ 86,048** | **$ 218,026** |



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| Ag Census Data Category | Animal Type | | 2002 | 2007 | 2012 | 2017 |
|---|---|---|---|---|---|---|
| Number of Farms by NAICS | Beef cattle ranching and farming (112111) | | 657 | 704 | 701 | 726 |
| | Cattle feedlots (112112) | | 214 | 75 | 9 | 9 |
| | Dairy cattle and milk production (11212) | | 129 | 123 | 76 | 57 |
| | Hog and pig farming (1122) | | 133 | 95 | 60 | 58 |
| | Poultry and egg production (1123) | | 283 | 405 | 455 | 286 |
| | Sheep and goat farming (1124) | | 503 | 669 | 630 | 753 |
| | Animal aquaculture and other animal production (1125,1129) | | 1,831 | 1,962 | 1,611 | 2,020 |
| | | | | | | |
| Value of Sales ($1,000) | Cattle and Calves | | 7,094 | 9,559 | 8,829 | 10,603 |
| | Hogs and Pigs | | 2,313 | 2,349 | 1,682 | 2,154 |
| | Poultry and Eggs | | 26,041 | 33,044 | 40,081 | 31,216 |
| | Milk* | | | | 26,119 | 23,962 |
| | Aquaculture | | 2,223 | 6,637 | 12,396 | 8,876 |
| | Other (calculated) | | 25,553 | 49,553 | 10,048 | 36,610 |
| | | Total | 92,378 | 135,233 | 99,155 | 113,421 |
| | | | | | | |
| Input Purchases | Livestock and poultry purchased | (Farms) | 1,819 | 1,768 | 1,876 | 2,077 |
| | | $1,000 | 8,265 | 11,977 | 14,758 | 18,845 |
| | Breeding livestock purchased | (Farms) | *562* | 572 | 621 | 643 |
| | | $1,000 | *1,971* | 4,681 | 4,087 | 4,266 |
| | Other livestock and poultry purchased | (Farms) | *1,397* | 1,380 | 1,473 | 1,711 |
| | | $1,000 | *6,294* | 7,296 | 10,671 | 14,579 |
| | Feed purchased | (Farms) | 4,654 | 4,669 | 4,683 | 4,997 |
| | | $1,000 | 31,277 | 41,361 | 54,047 | 47,403 |

** Measurement of milk sales in 2002-2007 are not comparable to 2012-2017.*

| | Animal Type | Output ($1,000) | Earnings ($1,000) | Employment (Jobs) | Income Taxes Paid ($1,000) |
|---|---|---|---|---|---|
| 2022 Animal Agriculture | Cattle and Calves | $ 14,039 | $ 2,845 | 93 | $ 748 |
| | Hogs, Pigs, and Other | $ 9,836 | $ 2,369 | 89 | $ 622 |
| | Poultry and Eggs | $ 345,006 | $ 69,710 | 1,870 | $ 18,316 |
| | Dairy | $ 42,719 | $ 8,987 | 233 | $ 2,361 |
| | Total | $ 411,600 | $ 83,911 | 2,285 | $ 22,048 |
| Change from 2012 to 2022 | Cattle and Calves | $ (4,147) | $ (840) | (27) | $ (221) |
| | Hogs, Pigs, and Other | $ (16,934) | $ (4,079) | (153) | $ (1,072) |
| | Poultry and Eggs | $ 195,966 | $ 39,596 | 1,062 | $ 10,404 |
| | Dairy | $ (18,948) | $ (3,986) | (104) | $ (1,047) |
| | Total | $ 155,937 | $ 30,691 | 779 | $ 8,064 |

| | Animal Type | Output($) | Earnings ($) | Employment (Jobs) |
|---|---|---|---|---|
| RIMS II Multipliers | Cattle and Calves | $ 1.61 | $ 0.33 | 10.6 |
| | Hogs, Pigs, and Other | $ 1.53 | $ 0.37 | 13.8 |
| | Poultry and Eggs | $ 1.91 | $ 0.39 | 10.3 |
| | Dairy | $ 1.94 | $ 0.41 | 10.6 |

| | | |
|---|---|---|
| Tax Rates | Federal effective income tax rate | 14.0% |
| | Federal Social Security tax rate | 6.2% |
| | State Effective Rate | 6.1% |
| | Total | 26.3% |

Sources: 2002, 2007, 2012 and 2017 Census of Agriculture, USDA/NASS Survey Data, RIMS II Multipliers (U.S. Bureau of Economic Analysis), Tax-Rates.org & The Motley Fool.



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